**AFCTN Report
94-107**

**AFCTB-ID
94-099**

Technical Graphics Transfer

Using:

AlliedSignal Technical Services" Data

Supporting:

LDAA's AFATS Program

(Contract #F41608-91-C-1276)

MIL-D-28003 (CGM)

Quick Short Test Report

16 July 1994

19960822 121

DTIC QUALITY INSPECTED 3

Technical Graphics Transfer

Using:

AlliedSignal Technical Services' Data

Supporting:

LDAA's AFATS Program

(Contract #F41608-91-C-1276)
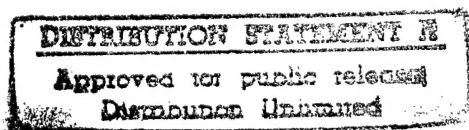
MIL-STD-1840A

MIL-D-28003 (CGM)

Quick Short Test Report

16 July 1994

Prepared By
Air Force CALS Test Bed
Wright-Patterson AFB, OH 45433

AFCTB Contact
Gary Lammers
(513) 427-2295

AFCTN Contact
Mel Lammers
(513) 427-2295

DISCLAIMER

This document was prepared as an account of the work sponsored by the Air Force. Neither the United States Government, the Air Force, nor any of their employees makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, nor represents that its use would not infringe on privately owned rights. Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or the Air Force. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or the Air Force, and shall not be used for advertising or product endorsement purposes.

Available to the public from the
National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161

This report and those involved in its preparation do not endorse any product, process, or company stated herein. Use of these means by anyone does not imply certification by the Air Force CALS Test Network (AFCTN).

Air Force CALS Test Bed

Notification of Test Results

16 July 1994

This notice documents the results of an Air Force CALS Test Bed (AFCTB) Quick Short Test Report (QSTR) evaluation of data submitted by:

AlliedSignal Technical Services

Identified as follows:

Title:	**Technical Graphics Transfer**
Program:	**AFATS**
Program Office:	**LDAA**
Contract No.:	**F41608-91-C-1276**
QSTR No.:	**AFCTB-ID 94-099**

Received on the following media: **9-Track Tape**

The results of the QSTR evaluation are as follows:

MIL-STD-1840A Standard	**Fail**
MIL-STD-1840A Media Format:	**Fail**
MIL-D-28000A IGES:	**N/A**
MIL-M-28001B SGML:	**N/A**
MIL-R-28002A Raster:	**N/A**
MIL-D-28003 CGM:	**Fail**

Formal results with associated disclaimer are documented and available from the AFCTB.

<div align="center">

Air Force CALS Test Bed
HQ ESC/AV-2P
4027 Colonel Glenn Highway, Suite 300
Dayton, OH 45431-1672
Phone: 513-257-3085   FAX: 513-257-5881

</div>

Contents

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was
to analyze AlliedSignal Technical Services' interpretation
and use of the CALS standards in transferring technical
graphics data. AlliedSignal used its CALS Technical Data
Interchange System to produce data, in accordance with the
standards, and delivered it to the AFCTN technical staff on
a 9-track magnetic tape.

2. Test Parameters

Test Plan: AFCTB 94-099

**Date of
Evaluation:**   16 July 1994

Evaluator: George Elwood
                                        Air Force CALS Test Bed
                                        DET 2 HQ ESC/AV-2P
                                        4027 Colonel Glenn Hwy
                                        Suite 300
                                        Dayton OH 45431-1672

**Data
Originator:**   Harry S. Barnes
                                        AlliedSignal Technical Services Corp
                                        One Bendix Road
                                        Columbia MD 21045-1897
                                        (410) 964-7000

**Data
Description:**   Technical Graphic Test
                                                2 Document Declaration files
                                                2 Computer Graphics Metafiles (CGMs)

**Data
Source System:**
                    1840
                                HARDWARE
                                        VAX 4100 VMS/Deck TSZ07 Drive
                                SOFTWARE
                                        VMS Tapetool v1.2.10

                    CGM
                                HARDWARE
                                        PC
                                SOFTWARE
                                        Inset System HiJaak

Evaluation Tools Used:

> **MIL-STD-1840A (TAPE)**
> > SUN 3/280
> > > AFCTN *Tapetool v1.2.10 UNIX*
> > > XSoft *CAPS/CALS v40.4*
>
> > **MIL-D-28003 (CGM)**
> > SUN SparcStation 2
> > > AFCTN *validcgm*
> > PC 486/50
> > > Advanced Technology Center
> > > > (ATC) *MetaCheck R 2.10*
> > > Inset Systems *HiJaak Pro*
> > > Micrografx *Designer v4.0*

Standards
Tested:

> MIL-STD-1840A
> MIL-D-28003

3. 1840A Analysis

3.1 External Packaging

The tape arrived at the Air Force CALS Test Bed (AFCTB) en-
closed in a box in accordance with ASTM D 3951. The exte-
rior of the box was not marked with a magnetic tape warning
label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was not enclosed in a barrier bag or barrier sheet
material as required by MIL-STD-1840A, para. 5.3.1.2.
Inspection of the tape reel showed the label indicating the
recording density, as required by MIL-STD-1840A, para.
5.3.1. Some 9-track tape units require this BPI to be set
manually. A packing list showing all files recorded on the
tape was indicated on the tape label.

3.2 Transmission Envelope

The 9-track tape received by the AFCTB contained MIL-STD-
1840A files. The files were named per the standard conven-
tions.

3.2.1 Tape Formats

The tape was run through the AFCTN *Tapetool v1.2.10* utility.
No errors were encountered while evaluating the contents of
the tape labels.

The tape was read using XSoft's *CAPS read1840A* utility
without any reported errors.

The physical structure of the tape submitted by AlliedSignal
meets the requirements defined in MIL-STD-1840A and ANSI
x3.27.

3.2.2 Declaration and Header Fields

Two errors were found in the Document Declaration file and
data file headers. These errors were incorrect date format
in the "dtetrn" record of file D001.

```
dtetrn: 1994 629
*** ERROR (MIL-STD-1840A; 5.1.1.2) - Invalid date format encountered.
*** NOTE (MIL-STD-1840A; 5.1.1.2) - Date Format shall be a four digit year
    followed by a two digit month followed by a two digit day.
```

This portion of the tape does not meet the requirements
defined in MIL-STD-1840A for CALS header format.

4. IGES Analysis

No Initial Graphics Exchange Specification (IGES) files were
included in this evaluation.

5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were
included in this evaluation.

6. Raster Analysis

No Raster files were included in this evaluation.

7. CGM Analysis

The tape contained two CGM files. The AFCTB has several tools for viewing CGM files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor and indication of CALS capability. All operations were performed using the default settings.

The files were evaluated using ATC's *MetaCheck* with CALS options. This utility reported that the files were not valid.

The files were evaluated using the beta AFCTN *validcgm* utility. This utility reported that the files were not valid CGM files.

The files were imported into the Micrografx *Designer*, which reported invalid format errors.

The files were read into Inset Systems' *HiJaak Pro* without a reported error; however, nothing displayed on the screen.

The CGM files do not meet the CALS MIL-D-28003 specification.

8. Conclusions and Recommendations

The tape from AlliedSignal could be read properly using the AFCTN *Tapetool* and XSoft's *CAPS read1840A* without any problems. The errors in the MIL-STD-1840A headers were minor and can be easily corrected. Because of the error in the Document Declaration files, this portion of the tape does not meet the CALS MIL-STD-1840A requirements.

The CGM files do not meet the CALS MIL-D-28003 specification.

The tape submitted by AlliedSignal does not meet the CALS MIL-STD-1840A requirements, due to the error in the Document Declaration files and the CGM files.

9. Appendix A - Tapetool Report Logs

9.1 Tape Catalog

CALS Test Network Catalog Evaluation - Version 1.2; Release 10 (C)

  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information
    ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
                     for Information Interchange
    ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Sat Jul 16 11:29:46 1994

MIL-STD-1840A File Catalog

File Set Directory: /cals/u1210/Set086

Page: 1

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D002	Document Declaration	D/00260	02048/000001	Extracted
D001C001	CGM	F/00080	00800/000001	Extracted
D002C001	CGM	F/00080	00800/000001	Extracted

Catalog Process terminated normally.

9.2 Tape Evaluation Log

CALS Test Network Tape Evaluation - Version 1.2; Release 10 (C)
   Standards referenced:
      ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
                          for Information Interchange
      ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Sat Jul 16 11:29:44 1994

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1CALS01   4

   Label Identifier: VOL1
   Volume Identifier: CALS01
   Volume Accessibility:
   Owner Identifier:
   Label Standard Version: 4

HDR1D001   CALS0100010001000000 94180 00000 000000

   Label Identifier: HDR1
   File Identifier: D001
   File Set Identifier: CALS01
   File Section Number: 0001
   File Sequence Number: 0001
   Generation Number: 0000
   Generation Version Number: 00
   Creation Date: 94180
   Expiration Date: 00000
   File Accessibility:
   Block Count: 000000
   Implementation Identifier:

                    <<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

########### End Of Tape File Set #############

Deallocating /dev/rmt0...

Tape Import Process terminated normally.

9.3 Tape File Set Validation Log

CALS Test Network File Set Evaluation - Version 1.2; Release 10 (C)

  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Sat Jul 16 11:29:46 1994

MIL-STD-1840A File Set Evaluation Log

File Set: Set086

Found file: D001
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: atscv1
srcdocid: ATSC
srcrelid: NONE
chglvl: ORIGINAL
dteisu: 19940629
dstsys: Unknown
dstdocid: Unknown
dstrelid: NONE
dtetrn: 1994 629
*** ERROR (MIL-STD-1840A; 5.1.1.2) - Invalid date format encountered.
*** NOTE (MIL-STD-1840A; 5.1.1.2) - Date Format shall be a four digit year
    followed by a two digit month followed by a two digit day.
dlvacc: NONE
filcnt: C1
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: Product Data
docttl: NONE

1 error(s), 0 warning(s), and 1 note(s) were encountered
in Document Declaration File D001.

Found file: D001C001
Extracting CGM Header Records...
Evaluating CGM Header Records...

srcdocid: ATSC
dstdocid: Unknown
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: UNCLASSIFIED
notes: NONE

Saving CGM Header File: D001C001_HDR
Saving CGM Data File: D001C001_CGM

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

A total of 1 error(s), 0 warning(s), and 1 note(s) were
encountered in Document D001.

Found file: D002
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: atscv1
srcdocid: ATSC
srcrelid: NONE
chglvl: ORIGINAL
dteisu: 19940629
dstsys: Unknown
dstdocid: Unknown
dstrelid: NONE
dtetrn: 1994 629
*** ERROR (MIL-STD-1840A; 5.1.1.2) - Invalid date format encountered.
*** NOTE (MIL-STD-1840A; 5.1.1.2) - Date Format shall be a four digit year
    followed by a two digit month followed by a two digit day.
dlvacc: NONE
filcnt: C1
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: Product Data
docttl: NONE

1 error(s), 0 warning(s), and 1 note(s) were encountered
in Document Declaration File D002.

Found file: D002C001
Extracting CGM Header Records...
Evaluating CGM Header Records...

srcdocid: ATSC
dstdocid: Unknown
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: UNCLASSIFIED
notes: NONE

Saving CGM Header File: D002C001_HDR
Saving CGM Data File: D002C001_CGM

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

A total of 1 error(s), 0 warning(s), and 1 note(s) were
encountered in Document D002.

A grand total of 2 error(s), 0 warning(s), and 2 note(s) were
encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

9.4 Other Tape Reading Logs

```
/cals/caps/Bin/read1840A: --- Read declaration file 'D001    ' ---
/cals/caps/Bin/read1840A: --- Read declaration file 'D002    ' ---
/cals/caps/Bin/read1840A: writing data file 'aftb9499/Unknown/Unknown1.C.cgm'.
-- declaration file indicates 0 files of type T
-- declaration file indicates 0 files of type G
-- declaration file indicates 0 files of type H
-- declaration file indicates 0 files of type Q
-- declaration file indicates 0 files of type R
-- declaration file indicates 1 files of type C
-- declaration file indicates 0 files of type X
-- declaration file indicates 0 files of type P
-- declaration file indicates 0 files of type Z
/cals/caps/Bin/read1840A: writing data file 'aftb9499/Unknown/Unknown1.C.cgm'.
-- declaration file indicates 0 files of type T
-- declaration file indicates 0 files of type G
-- declaration file indicates 0 files of type H
-- declaration file indicates 0 files of type Q
-- declaration file indicates 0 files of type R
-- declaration file indicates 1 files of type C
-- declaration file indicates 0 files of type X
-- declaration file indicates 0 files of type P
-- declaration file indicates 0 files of type Z
```

10. Appendix B - Detailed CGM Analysis

10.1 File D001C001

10.1.1 Parser Log MetaCheck

```
MetaCheck Version 2.10 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-93 CGM Technology Software
Execution Date: 07/16/94     Time:  11:58:10

Metafile Examined    : i:\94099\c101.cgm

Pictures Examined    : All
Elements Examined    : All
Bytes    Examined    : All

======================= Trace Report =========================

Tracing not selected.
```

10.2 File D001C001

10.2.1 Parser Log MetaCheck

```
MetaCheck Version 2.10 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-93 CGM Technology Software
Execution Date: 07/16/94     Time:  11:58:30

Metafile Examined    : i:\94099\c201.cgm

Pictures Examined    : All
Elements Examined    : All
Bytes    Examined    : All

======================= Trace Report =======================

Tracing not selected.
```